

## ELECTRONIC RECORD MANAGEMENT SYSTEM

### BACKGROUND

5        1.     **Field of the Invention.**

This invention relates in general to networked computing systems, and more particularly, to a system for managing electronic records.

10      2.     **Description of Related Art**

Email is a fast and convenient form of communication in the workplace. It is universally transforming the way organizations communicate and is rapidly spawning court cases regarding workplace privacy and monitoring, intellectual property, network security, electronic commerce, freedom of expression, harassment and safety.

15      Electronically stored data is often sought by opposing parties in litigation and by criminal justice authorities, since it may be the only record of a conversation or transaction. For purposes of evidence both state and federal courts have concluded that email records are a special form of computer records and are considered an official "record" of the organization. Consequently, email is rapidly becoming a critical information source in litigation. Recent court cases have found "smoking guns" in old 20 email and early drafts of corporate documents. The early drafts may not be binding, but may sometimes be used to establish a party's intent and the mind set of the author at the time a message was created.

25      Many organizations have no way to manage their email message. Email is a record. Most organizations do not have a system to index their email messages with other client related documents. Many organization do not have a system to record, store and purge email messages in the same manner they manage their traditional records and it's creating enormous risks.

30      Most organizations have no control over or record of the document sent as email file attachments to computer systems and organizations outside their organization. Employees often view email as equivalent to a private conversation and does not reflect the official position of the organization. These communications reflect preliminary thoughts or ideas that have not been reviewed by the organization and typically only reflect the personal opinion of the parties involved. Yet, since employees of the organization create these communications, court and regulatory agencies may conclude 35 these records reflect the organization's view. In addition, personal email messages

created by employees may not be the type of email messages an organization may wish to record and retain in their records management system. Currently, there is no system to separate personal email from business email.

Most organizations have not determined the records retention period and

5 procedures for email and established procedures to delete email from backup tapes. Information system managers generally develop elaborate procedures to backup and preserve email records for many years. Some system operators believe that backup information should be saved for long periods believing "longer is better." Even with short back up cycles, messages may still be maintained due to poor procedures for

10 erasing or recycling backup tapes. Even when magnetic tapes have been erased, overwritten, or damaged, experts using sophisticated techniques may still recover the information for litigation.

The concept of email is still new enough that companies who want to establish

15 their own guidelines are pretty much on their own, since no industry standard currently exists.

There is a need for an email system to track, sort, index, manage, authenticate,

purge and store email messages, with other documents, in a database to insure that the

email messages retained in the database may be the email messages an organization

chooses to retain as their official records versus unorganized messages that may have

20 the potential to create a liability for the organization.

There is a further need for a system that grants the senders and receivers of email

messages greater control over how their email messages may be sent, received, tracked

and purged.

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#### SUMMARY OF THE INVENTION

To overcome the limitations in the prior art described above, and to overcome

other limitations that will become apparent upon reading and understanding the present

specification, the present invention discloses a method and apparatus for managing

electronic records. A system in accordance with the principles of the invention

30 performs the steps of creating an electronic tag that uniquely identifies an electronic

record, storing the electronic tag, and distributing the electronic record. The method

further performs the steps of analyzing a network user's workstation specifications,

analyzing a network user's user profile, and generating a reference code, wherein the

electronic tag is generated from information analyzed in the network user's workstation

35 specification, the network user's user profile, and the reference code.

One preferred embodiment of the present invention includes a system that provides for the selective purging of emails. The sender or may determine whether an email is purgeable or not purgeable by the recipient. Alternatively, the system may determine the purge characteristics of a particular email based on the information stored in the electronic tag.

These and various other advantages and features of novelty which characterize the invention and various preferred embodiments are pointed out with particularity in the claims which are annexed hereto and which form a part hereof. However, for a better understanding of the invention, its advantages, and the objects obtained by its use, reference should be made to the drawings which form a further part hereof, and to accompanying descriptive matter, in which there is illustrated and described specific examples of apparatus in accordance with preferred embodiments of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings in which like reference numbers represent corresponding parts throughout:

Figure 1 is a block diagram illustrating an electronic record management system according to an embodiment of this invention;

Figures 2A–2C are flow diagrams depicting an email distribution process.

Figures 3–3C are flow diagrams illustrating the system 140 processing an incoming email messages;

Figure 4 is a block diagram illustrating the steps performed by an electronic record management system 100 according to an embodiment of this invention;

Figure 5 is a flow diagram illustrating the system 140 reading and executing an email's reference code;

Figures 6–6D are flow diagrams illustrating the steps typically performed by the email management system 140 in executing a minute mail message;

Figures 7–7B are flow diagrams illustrating a typical electronic contract process performed by the email management system 140;

Figures 8A–8C are an exemplary screen displays illustrating an electronic tag;

Figure 9 is an exemplary screen display illustrating a business email screen;

Figure 10 is an exemplary screen display illustrating a the personal email screen;

Figure 11 is an exemplary screen display illustrating a minute mail screen;

Figure 12 is an exemplary screen display illustrating a purge confirmation report screen;

- Figure 13 is an exemplary screen display illustrating an intranet-base email screen;
- Figure 14 is an exemplary screen display illustrating a bulletin board email screen;
- 5       Figure 15 is an exemplary screen display illustrating an email proposal screen;
- Figure 16 is an exemplary screen display illustrating an email proposal confirmation screen;
- Figure 17 is an exemplary screen display illustrating another email proposal screen;
- 10      Figure 18 is an exemplary screen display illustrating another email proposal screen;
- Figure 19 is an exemplary screen display illustrating another email proposal screen;
- Figure 20 is an exemplary screen display illustrating another email proposal screen;
- 15      Figure 21 is an exemplary screen display illustrating email proposal signature screen;
- Figure 22 is an exemplary screen display illustrating the email contract electronic tag screen;
- 20      Figure 23 is an exemplary screen display illustrating an electronic tag screen;
- Figure 24 is an exemplary screen display illustrating a screen to request an email record;
- Figure 25 is an exemplary screen display illustrating a search engine interface;
- Figure 26 is an exemplary screen display illustrating another search engine interface;
- 25      Figure 27 is an exemplary screen display illustrating an email report;
- Figure 28 is an exemplary screen display illustrating an email records retention notice; and
- Figure 29 is an exemplary screen display illustrating a records retention confirmation notice.

#### DETAILED DESCRIPTION OF THE INVENTION

In the following description of the exemplary embodiments, reference is made to the accompanying drawings that form a part hereof, and in which is shown by way of illustration a specific embodiment in which the invention may be practiced. It is to be

understood that other embodiments may be utilized and that structural changes may be made without departing from the scope of the present invention.

The present invention provides a method and apparatus for maintaining policy compliance on a computer network.

5       Figure 1 is a block diagram illustrating an electronic record management system 100 according to an embodiment of this invention. The hardware generally implementing an electronic record management system 100 may include computers 105 having processors and memories 130 distributed over a network as is well-known in the art. The memory may include random access memory (RAM) or fixed storage. The  
10 program steps implementing this invention are stored in the memory 130 and executed by the computer processor 105. The present invention may be implemented using an intranet based application that can be stored on central servers, waiting to be called up and manipulated via a Web browser from any location. Those skilled in the art will recognize that a variety of configurations can be used without departing from the scope  
15 of the present invention and that a wide variety of distributed and multi-processing systems may be used.

A document management system 135 and an email management system 140 may be included and may feature an electronic tag for maintaining historical records for documents within the systems 135 and 140. The document management system 135 and the email management system 140 may both reside on an Intranet and the documents may be in HTTP format. The documents from the systems 135 and 140 both systems may be filed in a central repository database 150.

20       The email management system 140 manages email records. An email records database 180 may contain a read-only copy of email messages generated from the system 140 that may only be accessed by an encryption key. A watermark database 200 marks and authenticates an email message that has been stored in the email records management database 180. An electronic contracts database 190 stores and records email contracts and their status. An email records retention module of the policy compliance monitor 110 provides system administrators with a checklist of procedures  
25 to execute as part of managing the system 140. The policy effectiveness module 120 monitors network user email policy compliance. Each of the blocks of FIG. 1 will be introduced, followed by a detailed explanation of each block.

30       Block 110 represents a policy compliance monitor for monitoring compliance across the network.

Block 115 represents a policy compliance and reporting module for managing information received from the compliance monitor.

Block 120 represents the policy effectiveness module for managing the policy compliance monitor 110.

5 Block 130 represents a database or memory for storing policy and compliance information.

Block 135 represents the document management system of the compliance monitor 110.

10 Block 140 represents the email management system of the compliance monitor 130.

The document management system 135 assigns an electronic tag to all documents. The electronic tag is a method to track and index documents in a central repository residing on an Intranet web server. The electronic tag also provides a method to track documents sent as email file attachments.

15 The email management system 140 uses electronic reference codes embedded in electronic tags to track, index, record, store and purge email messages with other client related documentation in a central database. An electronic tag provides a method to track and index email messages in a central repository. The electronic tag also provides a method to retain an authentic record of all business email messages sent and received by the organization.

20 The present invention discloses a method and apparatus for maintaining policy compliance on a computer network. FIG. 4 is a block diagram illustrating the steps performed by an electronic record management system 100 according to an embodiment of this invention. Block 400 represents the system 140 creating an electronic tag that uniquely identifies an electronic record. Block 402 represents the system 140 analyzing a network user's workstation specifications. Block 404 represents the system 140 analyzing a network user's user profile. Block 406 represents the system 140 generating a reference code, wherein the electronic tag is generated from information analyzed in the network user's workstation specification, the network user's user profile, and the reference code. Block 408 represents the system 140 storing the electronic tag. Block 410 represents the system 140 distributing the electronic record.

One preferred embodiment of the present invention includes a system that provides for management functions related to electronic records, such as the selective purging of emails. The sender or may determine whether an email is purgeable or not

purgeable by the recipient. Alternatively, the system may determine the purge characteristics of a particular email based on the information stored in the electronic tag.

The policy compliance monitor 110 works with the policy effectiveness module 120 to provide network user compliance monitoring with network security policy stored in a database, it electronically evaluates network security policy compliance based on network user compliance, and it undertakes a network policy compliance action in response to network security policy compliance. Network user compliance monitoring is defined as monitoring network activity to insure users are in compliance with the organization's network security policies. Network security policies typically include a set of rules designed to limit an organization's risk and liability.

The policy compliance and reporting module 115 provides automated policy monitoring as well as policy violation procedures and reporting. It also tracks policy investigations and generates policy investigation reports. These procedures work-in conjunction with existing policy compliance reporting, discipline and grievance procedures to uphold the organization's technology policies. The policy compliance and reporting module 115 monitors and records user and network system activities audit procedures and reporting, policy violation procedures/investigations/reporting, compliance/non-compliance status reporting.

The policy effectiveness module 120 electronically collects, records, analyzes and stores information from policy compliance monitoring, analyzes policy compliance and reporting, evaluates network policy compliance actions undertaken in response to the network security policy violations and electronically implements a different network security policy selected from network security policies stored in a policy database. The policy effectiveness module 120 analyzes information collected from the policy compliance and reporting module 115 to determine if network user compliance policies are effective. If a policy is determined to be ineffective, a new policy may need to be implemented.

A sample policy compliance monitor, policy compliance and reporting module, and policy effectiveness module are disclosed in Application Serial No. 09/104,946, entitled "NETWORK POLICY MANAGEMENT AND EFFECTIVENESS SYSTEM," filed on June 25, 1998, by Andrea M. Jacobson, which application is incorporated by reference herein.

## Email Management System 140

The electronic record management system 100 may include an email management system 140. The email management system 140 may include existing email systems, such as a Lotus Notes® system. The email management system 140 5 may be a web-based application that assigns an electronic tag with a reference number to all email messages originating from the organization. Typical email messages created in and read by the email management system 140 are HTTP standard. Accordingly, such documents may be created and retained in HTML format and may utilize an HTML interface that may be read by any web browser. Alternatively, email 10 documents may be stored on file servers in text formats such as those readable by word processing and office suite products. In the preferred embodiment, all email messages typically are stored on intranet web servers instead of the file servers in word processing and office suite products. This allows sophisticated HTML and JavaScript based email forms and the back end application development capabilities of HTTP servers and the 15 World Wide Web. A system administrator may configure who can read, edit and access each document or directory of documents as demonstrated with existing Internet access and security protocols.

In the system 140, email may include text, graphics and audio/video communications. The email management system 140 typically provides email reference 20 codes, and such email reference codes may include, for example: business email codes, personal email mail codes, Intranet email messaging, message purging codes, minute email codes, limited email codes and a bulletin board for internal, broadcast email messages. The functionality of the email management system 140 may be based on user-definable email reference codes set forth by an organization's network policies.

An organization's network policies may define how, what and if email messages 25 may be registered with the system 140 at the creation stage or purged by the system 140. An electronic tag may be attached to all email message templates. An electronic tag is a set of data stored with an email message in the email records database 180. The electronic tag includes information fields that may provide a method to centrally index, 30 search, store, monitor and record email messages with other documents, track and record email history, monitor policy compliance including access to and disclosures of documents sent as email file attachments, and may determine the destruction of email documents. Typically, an email header may contain fields for a recipient's address, sender's address, subject, copy, and blind copy. An electronic tag may contain a 35 sender's workstation specifications, including but not limited to, the software used to

create the email, the version of the software used to create the email, workstation serial number, date, time and workstation model number. The electronic tag may include network user information obtained from the network user's User Profile. Network user information may include, but not limited to, employee identification number, network 5 access code, department/division information, title, password, login verification, workstation specs and mailstop. Figures 8A, 8B and 8C are exemplary screen displays illustrating the electronic tag according to one embodiment of the invention.

For example, an organization may require a network user to have approval from upper management in order to purge email messages. Another optional policy is to 10 require all internal email messages be to be purged daily, so that no internal record is maintained. Another policy may be to monitor personal email message to insure that network users are not conducting business for personal gain. Therefore, the functionality of the system may be based on user-definable email reference codes set forth by an organization's network policies.

15 Email policy options may be integrated into the policy compliance monitor 110 and the document management system 135 so that all email messages, originating from within the organization can be indexed, recorded, retrieved, tracked and purged in the central repository database of the document management system 135. Further, all email messages may be assigned an electronic tag which may be copied to, recorded and 20 retrieved from intranet web servers of the document management system 135 and may be measured for policy compliance by the policy compliance monitor 130.

### Email Reference Codes

An email message may be assigned an electronic tag. An electronic tag typically 25 contains several information fields that collect and track an email's history, including, but not limited to, tracking the number of copies and revisions, who made a copy and when, and may contain a reference code. The email reference code may be comprised of text letters (i.e., text value) and a numeric value. The text value may tell the system how to process the email message. The numeric value may be used to identify and track 30 the email to the master file. The numeric value may correlate the email to a master file stored in the central repository. If a network user chooses the minute mail option, a function that allows senders and receivers of email messages to send, receive or purge emails from the system 140 without a record of the message being retained by the sender, receiver or the log file of the email system 140, the numeric number may be the 35 network user's employee identification number paired with a text code, e.g., MMM.

Email reference codes are also used to tell the system how to process email, and as a method to track and identify the email within the system. Email reference codes may be used to process email contracts, personal email, business email, bulletin board email, intranet email, identify and track incoming email, store and retrieve email messages via search engines from the central repository database and/or the email records database.

A reference code may be comprised of text letters (i.e., text value) and a numeric value. The numeric value may be used to identify and track the email to the master file. The text value may trigger an object and tell it how to process the email message. An object has specific characteristics and may carry out specific actions that are triggered by an event and is stored in the email management database 190. In email management system 140, the object is a self-contained unit of functionality whose specific actions are triggered when a text value matches an email reference code. Once the object and the text code are matched, the text code triggers the object to receive instructions from a script language. Every object typically has attached to it a script that contains the procedures used to manipulate the object. Therefore, the type of email reference code entered into the reference code field determines the object that will be used.

The type of email reference code may also determine the purge options for an email message. The sender typically may define an email message as purgeable or not purgeable by the recipient. Alternatively, the type of email reference code may determine whether an email message is purgeable.

Figure 5 is a flow diagram illustrating the system 140 reading and executing an email's reference code. Typically, a network user may choose the type of email message he desires to send from the email message menu in the email application. Block 501 represents the system 140 presenting the user with email options. The type of email message the network user chooses is represented by a text value that may appear in the reference code of the email's electronic code. Block 502 represents the system 140 reading the text values of the user's email choice. A numeric value is also paired with the text value to create the reference code for the email. Block 503 represents the system 140 reading the numeric value of the user's email choice.

A sorting algorithm may be responsible for reviewing text values and matching it to an object. Block 504 represents the system 140 analyzing text code and object codes. The text value may determine the functions the object will execute. The system 140 analyzes the text value in relation to the objects in the email management database 190. If the text values are equal, the system 140 chooses the object and begins reading the object's scripting language.

Block 505 represents the system 140 matching the text code to an object. The scripting language contains the procedures for handling the email message. Block 506 represents the system 140 reading an object's script.

For example, an organization may determine that the letters MMM and a master  
5 file number may be used as the email reference code for minute mail. When the  
network user having an employee number of 1030 decides to send an email, he may  
enter the code MMM1030 into the email reference code field in the electronic tag of an  
email message. When the network user sends the email message, the system 140 may  
read the email's electronic tag may begin executing the scripting code within the  
10 application. Each scripting code typically correlates to an email reference code and  
activates an object.

The system 140 may read the email's electronic tag, the network user's user  
profile and the identity of the network user's workstation (e.g., the Win95 registry).  
The email management system 140 may read the workstation's local machine which  
15 may include fields depicting settings specific to the machine and settings specific to the  
network user from the workstation's operating system. Machine settings may include  
the hardware profile, including serial number, system specifications, software, including  
licensed software, non licensed software (i.e., personal software installed by the network  
user), software drivers, memory status, system diagnostics, and other information.  
20 Network user information may include the network systems logon status, access status  
(e.g. remote access or local), network status, software configurations, and other user  
definable information fields.

Next, the system 140 may read several fields from the network user's user  
profile, including the network user's name, network user's email address; network  
25 user's surface mail address, employment status (i.e. temp, contract, virtual), title,  
department, organizational chart indicating who the network user reports to, the direct  
reports, his assistant, mail station address, and employee identification number. System  
140 may also read system information, which may include hardware information  
including, but not limited to, serial number, system specifications, software including  
30 licensed software, non licensed software (i.e., personal software installed by the network  
user), software drivers, memory status, system diagnostics, software information  
included but not limited to software configurations, licensed software, non licensed  
software, logon status, network user's system access, security status, and any special  
network access or privileges (i.e. using network for charitable uses.), system compliance  
35 status and other user definable information fields.

Next, the system 140 may read the email reference code and determine that the email is a minute mail, e.g. text value of MMM. The MMM may trigger an object to carry out its specific actions. In this case, the system 140 may send the email message to the recipient. The object may apply font and color changes to the email. After the  
5 recipient has opened and received the email message, the system 140 may allow the network user to view the email message for a minute, or other period of time. After the time has elapsed, the message may disappear from the screen and the system 140 may begin to purge the email message from the network user's email application, the sender's email application and the email log file. The system 140 may read the sender's  
10 email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag. Next, the system 140 may read the email server log file. The system 140 may use a sorting algorithm to search for the email header fields to match the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag. Once the exact  
15 email entry is found, the system 140 may purge the email message by deleting the entry from the system 140. Next, the system 140 may read any back up tapes, other storage media or any copies of the email that may have been listed in the copy field of the email or forwarded to other recipients. The system 140 may use a sorting algorithm to search for the email header fields to match the sender's email address field, recipient's email  
20 address field, subject field, time and date field, and copy fields of an email's electronic tag. Once the exact email entry is found, the object may purge the email message from the system 140 by deleting the entry from the system. The system 140 records the purging process in the email management database 190. The system 140 sends a final message to the sender and the recipient to indicate the purging process is completed.  
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### **Business Email Reference Code**

Email is a record that an organization may need to retain as a record. A business email is defined as an email message that an organization may want to retain because it is a record of the organization's business. This may include email messages representing  
30 client correspondence, transactions or other emails containing valuable information the organization desires, or is required to retain as a record.

The email management system 140 assigns an electronic tag with an email reference code to all business email messages to assist in index, record, store, search, retrieve and dispose of the email records.

Figures 2A through 2C are flow diagrams depicting an email distribution process. In an exemplary embodiment, the email message may be a business email message. Block 201 represents the system 140 receiving a request from the network user to compose a business email message. Figure 9 is a screen display illustrating a typical business email screen. The network user selects an email page to identify the type of email message the user may compose. Email pages may include business email, personal email, Intramail and bulletin board mail.

The email management system 140 reads the network user's workstation specifications. Block 202 represents the system 140 reading the network user's workstation and network address. For example, when utilizing a Microsoft Windows operating system, the document management system 140 may read the network user's operating system registry, which may be a tree-structure, hierarchical database where the system and programs store data. The registry may be stored in two files. The actual files used can vary based upon configurations of the system but will generally be split into a file having settings specific to the machine, (typically system.dat) and a file having settings specific to the user (typically user.dat.) from the workstation's operating system.

The email management system 140 reads the a workstation's local machine which may include fields depicting settings specific to the machine and setting specific to the network user from the workstation's operating system. Machine settings may include hardware profile including serial number, system specifications, software including licensed software, non licensed software (i.e., personal software installed by the network user), software drivers, memory status, system diagnostics, and other information. Network user information may include the network systems logon status, access status (e.g. remote access or local), network status, software configurations, and other user definable information fields.

The system 140 may read fields from the network user's user profile. Block 203 represents the system 140 reading a network user's user profile.

An organization may use an indexing system to identify work tasks. For example, the organization may track information on a client or project basis. All clients or projects in the email management system 140 may be assigned a reference code, and a master file number may be assigned to all project, entity, and/or business files listed in the document management system 140. In the preferred embodiment, a new master file is created and entered into the system 140 in a manner similar to that used by Microsoft products, e.g., the creation of a New folder or file. In the system 140, when a master

file is established it is typically replicated in the email records database. In the preferred embodiment, a master file is replicated in a manner similar to that of replicating a database in the Lotus Notes® system.

After the user has composed an email and has clicked on the send icon in an email application, the system 140 typically presents the user with a menu listing files in the central repository database. The user may select the file in the central repository database in which to store a copy of the email message. After the user has chosen the location to store the email message in the central repository, the system 140 typically reads the master file number field from the file in the central repository. The master file number and the email Intranet web site may be used to generate a reference code for the business email. If the email message is a business email, the system may assign the letters BEM to the beginning of the reference code. Block 204 represents the system 140 generating the reference code.

For example, if a user has composed a business email message, he may choose to index and store the business email. The user may indicate the file where the email messages is to be stored. The system 140 may read the master file number from the location where the network user wishes to store the business email message. Next, the system 140 may read the Intranet site to determine the type of email message the user has composed. Therefore, if a master file code is 1000 and the system 140 determines that the network user composed an email message from the business email Intranet site, the reference code for the business email electronic tag may be BEM1000. This reference number may be used by the system 140 to index and track the email in the system 140. In addition, the email management system 140 may use the business email reference code to index, record, search, retrieve and store all business email correspondence with other client, project and/or business records and determines business email storage and disposal. The reference code may be recorded in the reference code field of the electronic tag of the email message. Block 205 represents the system 140 generating an electronic tag.

In a preferred embodiment, after the business email message has been indexed, the system 140 sends the original email message and generates two copies of the business email message. Typically, all business emails are stored in read-only format in the central repository database 150 and in the email records database 180.

Figure 2B is a continuation of the email recording process depicted in Figure 2A. Block 206 represents the system 140 sending the original email message. Typically, the two copies are converted into HTTP format. Block 207 represents the

system 140 copying the email message and its electronic tag. The process is similar to that of word processing programs convert word processing documents into HTTP format by automatically attaching HTML tags to the document, as is known in the art.

Figure 2C is a continuation of Fig. 2B. Block 208 illustrates the system 140 distributing the copied email messages to databases 150 and 180. Block 209 represents the system 140 sending the email to the recipient of the email. Block 210 represents the system 140 converting the email messages to HTTP format. Block 211 represents the system storing the email messages in the central repository database 150. Block 212 represent the system 140 storing the email in the email records database 180.

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### Personal Email Codes

Personal email codes allow an organization to enforce a policy regarding personal email use. The email management system 140 may give the organization the opportunity to monitor email policy compliance by setting maximum email message usage levels for personal emails.

A network user may be assigned a personal email code number. Figure 10 is an exemplary screen display illustrating a personal email screen. Personal email codes may end in a text, e.g., PEM, that indicates a personal email message and includes the network user's employee identification number. For example, a network user's employee identification number may be 14772, and the user's personal email code number may be PEM14772.

A network user may send a personal email message from a personal email Intranet site. The network user may enter his personal email number into the reference code field of the electronic tag of an email message. The email management system 140 may be configured to read the personal email code and compare the personal email code to the maximum number of personal email messages assigned to the network user to monitor the number of daily personal email messages a network user sends per day. The maximum number may be listed in the network user's user profile.

When composing a personal email message, the user may be required to enter his personal email code into the reference field of the personal email message. After the user has composed the email and has indicated that he wants to send the email message. The system typically reads the maximum personal email number from the network user's user profile and reads the personal email field for email messages sent for the day. If the network user is within his personal email range, the email message will be sent to the recipient. If the numbers of email messages are greater than the amount of

maximum email messages that a user is allowed to send, the system will retain the email message in a queue. Those skilled in the art will recognize that this “holding” process may be implemented when a faulty network connection prevents delivery of an email message. Email messages may be retained in a queue until the network connection can be reestablished. The system could send the email message when the user logs into the system on the following day. Alternatively, violation of the limits may result in actions other than placing the email message in a queue, such as sending the network user or network administrator a warning message. The message may also be processed regularly, but the network email policy violation may be indicated in a log file.

5           The personal email code may also signal the system 140 to attach a disclaimer to the bottom of each email message with a PEM as the email code in the reference code field. For example, a disclaimer may include a message to the receiver that the email message they have received is the opinion of the user and not that of the employer, thereby limiting the organization’s liability. If the network user exceeds the

10          maximum personal message limit, the email management system 140 signals the policy compliance monitor 130 to provide network user compliance monitoring with network security policy stored in a database, to electronically evaluate network security policy compliance based on network user compliance, and undertake a network policy compliance action in response to network security policy compliance.

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### **Minute Mail**

The minute mail function of the email management system 140 allows senders and receivers of email messages to purge emails from the system 140 without any record of the message being retained by the sender, receiver or the log file of the email system 140. Figure 11 is an exemplary screen display illustrating a minute mail screen. The system 140 is flexible in that it can perform various user definable minute message options including sender purge and recipient purge. Typically, the system 140 may also provide several message notification options that are similar to Caller-ID options currently sold by phone companies. A network user may choose minute mail options from a menu of email messaging options within the email management system 140.

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Examples of message notification options include block minute mail, sender’s request to send minute mail, view sender’s address prior to opening and/or accepting a message, autoreply to decline purge minute mail, autoreply indicating network user accepts minute mail and declines purge, autoreply indicating network user accepts and saves all minute mail, minute mail waiting, and purge minute mail request denied.

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Each email message typically has an electronic tag. The system 140 may record the sender and recipient's message activities in the email's electronic tag. For example, the system may send notification messages to the sender regarding the recipient's treatment of an email message. Several sender reply options may include block minute mail, purge unopened minute mail, purge minute mail received, notify recipient minute mail request, notify sender decline minute mail acceptance, purge minute mail sent confirmation, purged minute mail destroyed confirmation notice, and purge email and electronic tag. Several purge options that may include purge email content only, purge email only, purge file attachment only, purge email and retain file attachment, and purge email and electronic tag. The network user may define his minute mail preferences in the email application by indicating his minute mail preferences. This is similar to current email applications in which the network user may indicate how he wants to be notified of any incoming email message. System administrators may also define minute mail preferences for the organization. Once again, this is typically a user-definable feature.

The system 140 may read the purge rights field of the user profile to determine the purge rights and/or options of the network user. A purge code listed in the purge rights field may be stored in the email management database 180. The purge code values may coordinate with the purge rights and purge options granted to the user in the system. The network user's purge rights may be recorded in the network users user's profile. Figure 12 is an exemplary screen display illustrating purge confirmation report;

The sender and the recipients of a message may have the option of overriding a minute mail purge request. For example, a network user may send a minute mail to be automatically purged by the system. The recipient of this message may choose to save the minute message instead of allowing the system to continue executing the sender's choice of purging the minute mail message. This is typically another user-definable feature. An organization using the present system may select who has access to the purge options in accordance with their network policies. The system administrator may determine who has purge minute mail rights. Network users may be assigned a purge code. The codes may be stored in a network user's user profile. For example, an officer of an organization may have more purge rights and/or options than temporary employees in an organization.

With the minute message option, an email message may remain on the screen for a limited period of time after the user has opened the email message. The network user or the system administrator may determine the period of time a message is displayed. In

the present system, the network users typically have the option to accept, decline, block, purge, print, copy or retain the message.

Figures 6A – 6D are flow diagrams illustrating the steps typically performed by the email management system 140 in executing a minute mail message. Block 600 represents the system 140 receiving a request from a network user for an email form. The network user may choose the type of email message he or she chooses to send. The network user may also fill in the fields of the electronic tag. For example, an organization may determine that the letters MMM and the employee's identification number are to be used as the email reference code for minute mail and the network user's employee identification number may be 100. The code MMM100 may be entered into the email reference code field. Block 601 represents the system 140 presenting an email form to the network user. The network user creates the email message and indicates that the message is to be sent. Block 602 representing the system 140 receiving the email form. When the network user sends the email message, the system may read the email's electronic tag to begin executing the scripting code within the email management system 140. Block 603 represents the system 140 reading the electronic tag. Each scripting code correlates to an email reference code. Block 604 represents that system 140 reading the reference code. The scripting code activates an object.

The system 140 may read the email's electronic tag, the network user's user profile and the network user's workstation specifications including, but not limited to the workstation hardware configuration, hardware descriptions, BIOS info, software configuration, and network information.

Block 605 represents the system 140 reading the numeric values of the reference code. Block 606 represents the system 140 reading the user's profile. Block 607 represents the system 140 reading the network user's workstation.

The system 140 may read the reference code MMM and determine that the email is a minute mail.

Block 608 represents the system 140 analyzing text values of the reference code. The reference code, e.g., MMM, may trigger an object to carry out specific actions.

Block 609 represents the system correlates the text code to an object. The system 140 may send the email message to the recipient. Block 610 represents the system 140 matching a text code to an object.

Block 611 represents the system 140 reading the object's script.

Block 612 represents the system 140 sending the email message. The object may apply font and color changes to the email.

- Block 613 represents the system 140 reading and applying the format options. The email management system 140 supports HTTP format, therefore several email
- 5 message format options may include a variety of font style, font colors and email message designs. Block 614 represents the system 140 selectively activating a message status indicator. After the recipient has opened and received the email message, the system 140 may allow the network user to view the email message for a limited period of time.
- 10 Block 615 represents the system 140 recording the recipient's opening the email message's electronic tag. After a specified period of time has elapsed, the message may disappear from the screen and the system 140 may begin to purge the email message from the network user's email application, the sender's email application and the email log file.
- 15 Block 616 represents the system timing the email message. The system 140 may read the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag.
- Block 617 represents the system 140 deleting email from the user's screen.
- Block 618 represents the system 140 reading the sender's email address field.
- 20 Block 618 represents the system 140 reading the recipient's email address field.
- Block 620 represents the system 140 reading the subject field.
- Block 621 represents the system 140 reading the date and time field.
- Block 622 represents the system 140 reading the copy field.
- Figure 6D is a continuation of the flow diagram of Figure 6C. Block 625
- 25 represents the system 140 reading an email server log file. The system 140 may use a sorting algorithm, as is known in the art, to search for the email header fields to match the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag.
- Block 626 represents the system 140 sorting log files to match address fields of
- 30 the email message. A typical email address fields may include to, from, subject, cc:, and bcc:. Once the exact email entry is found, the system 140 may purge the email message by deleting the entry from the system.
- Block 627 represents the system 140 purging the email message.
- The system 140 typically provides user-definable features that allow users to
- 35 interrupt the purging process. The system 140 may be configured to present the

network user with an icon or message box that permits the network user to selectively interrupt the message purging process. The system may also be configured to not allow interruption, whereby once the system 140 enters the log file deleting routine the network user may not be able to interrupt the purge process.

- 5 Email systems known in the art record in the email server logs the sender and the recipient of the email message. Generally, the message content is not recorded. In the preferred embodiment of the present system, the email system 140 has tape, or other storage media, backup policies, and procedures that differ from the traditional computer network backup and storage policies and procedures. Those skilled in the art will
- 10 recognize that any hardware/software configuration is possible that allows the email system 140 to control the backup and storage procedure, thus allowing the effective purging of emails in the system 140. Generally, longer backup cycles for a network are preferred by system administrators since it may ensure an organization's ability to recover from computer or network failures or disturbances. For an email system,
- 15 generally, shorter backup cycles are preferred to ensure no unwanted copies of email messages reside in the system or on back up media.

In the system 140, no backup of the email system 140 may be the optimal backup procedure to ensure that no unwanted copies of email messages reside in the system or on back up media. Backup procedures may be necessary for all of the email databases within the system 140. This may include, but is not limited to, the email records database 180 and the email management database 190.

System 140 may be configured so that copies of email that may have been listed in the copy fields of the email header or messages forwarded to other recipients are searched by the system. Block 628 represents the system 140 reading the copy and forward fields of the email header. The system 140 may use a sorting algorithm, as is known in the art, to search for the email header fields to match the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag. Once the exact email entry is found, the object that is correlated to the purge code in an email's electronic tag may purge the email message from the system 140 by deleting the entry from the system 140.

Block 629 represents the system 140 recording the email purge. The system 140 may send a purge confirmation message to the sender and the recipient to indicate the purging process is completed. Block 630 represents the system 140 sending an email purge confirmation notice.

The system 140 typically has several user-defined purged message recording options. For example, the network user may define if the system 140 is to retain the electronic tag from a purged message in the email management database. Alternatively, the system 140 may read the purge rights value of the user profile to determine the

- 5 purge rights and/or options of the network user as defined by the policies of the organization or a system administrator.

The system 140 may be configured so that the system administrator may determine who has purge message recording rights. Network users may be assigned a purge code. A purge code is typically configured in system 140 to tell the system how 10 to process an email. If a network user has a purge code in their user profile, the system may permit the network user to purge any email messages he chooses. Alternatively, the purge code may allow a user to purge only the content of an email (retaining the electronic tag) or both the email and the electronic tag. The purge codes may be stored in a network user's user profile, and it may tell the system that the network user has the 15 right to purge email messages. For example, a chief executive officer (CEO) may have more purge rights and/or options than other employees. The purge value code listed in the purge rights field may be stored in an email records database 180. The purge code values may coordinate with the purge rights and purge options granted to the user and stored in the network user's user profile in the system.

- 20 After an email message has been disposed, the system 140 may record the disposal in the message disposal status field of an email's electronic tag.

### An Internal, Intranet-Based Mailing System

An internal, intranet-based mailing Intranet site may provide fast inter-office 25 messaging. Email may be used for more formalized correspondence and record keeping. Figure 13 is a screen display illustrating an intranet-base email screen. Internal messages can be sent to individuals and small groups. The internal messages can be customized and may be limited in length, for example, to 200 characters per message. System 140 may be configured so that internal messages do not have a 30 tracking or reference number and may be purged daily or weekly from the system. Such internal messages could include prefabricated messages. Since internal messages may not have a tracking or reference number in such a system, the messages may not be tracked or indexed by the system. QuickNotes™ is an existing Intranet-based email system that provides inter-office messaging.

## Bulletin Board Email Postings

- A bulletin board, Intranet mailing system may provide opportunities for employees to post messages and other internal notices. Figure 14 is a screen display illustrating a bulletin board email screen according to an embodiment of the invention.
- 5 If messages are posted to a bulletin board, email may be used for more formalized correspondence and record keeping.

## File Encryption Tracking, and Monitoring

- File encryption tracking and monitoring may protect data confidentiality and 10 reduce its accessibility. The system 140 may also be configured so that it uses file encryption tracking and monitoring to help reduce the risk of data loss by accidental or intentional modification, the disclosure of or destruction of confidential or proprietary information, or through the unauthorized use of information for commercial gain or malicious purposes. The file encryption tracking and monitoring activity may be 15 reported to the policy compliance monitors 130 for compliance reporting and tracking. Known products configured to accomplish these tasks include the InvisiMail™ system available from RPK.

## Writing Standards and Email Content Policy Compliance

- 20 The system may be configured to include a writing standards policy compliance function in order to enact a more careful review of email messages sent outside of the organization and prevents problematic email from ever being created. Known products that are configured to accomplish this functionality include Privacy Alert software available from Aladdin Web Solutions.

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## User Identity Module

- To be in policy compliance, users typically must adhere to the addressing and naming conventions as defined by their organization. A user identity module in the present system may be configured to ensure that a network user is not allowed to send 30 email messages using an alias or a false identity. Generally, a network user is assigned one email address, and if the network user attempts to send an email message under a false email address or name, the system will not allow the email message to be sent. The Novell Groupwise system available from Novell is an email product that restricts network users from sending an email message by using an alias or false email address.

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## **Email Storage Monitoring**

- The system 140 may be configured to monitor email storage space and to make the storage space size user-defined. For example, a CEO may be permitted greater email storage space and bandwidth than other employees. The system 140 may also be
- 5       configured to read the job level fields of the user profile to determine the amount of email storage space and bandwidth to allocate to the network user. The job levels listed in the job level field may be stored in the email records management database 180. The job level values typically coordinate the amount of storage space the system 140 may allocate for email storage.
- 10      For example, a CEO may have a job level A and an administrative assistant may have a job level W. When the CEO logs into the system 140, the system 140 may read the job level field from the CEO's user profile. Next, the system 140 may refer to the email storage database 1000 to match the value listed in the job level field to the email storage allocation field. In this example, job level A may be allocated 500 kilobytes of
- 15      memory. The system 140 allocates the appropriate email storage space for the CEO. Likewise, when the administrative assistant with job level W logs into the system 140, the system 140 may read the job level field from the administrative assistant's user profile. Next, the system 140 may refer to the email storage database 1000 to match the job level field to the email storage allocation field. In this example, job level W may be
- 20      allocated 100 kilobytes of memory.

## **Passwords**

- The email compliance system 140 has time and date fields to send email to users who have not changed their passwords for a set period of time. The email management
- 25      system 140 may be configured to require network users to choose better, hard-to-break passwords. The email management system 140 preferably tracks a network user's log-in/passwords/hardware token information and monitors password access to the system 140.

## **30      Message Status**

- The system 140 may alert the network user to the status and arrival of an email message. When a network user receives an email message, the system 140 may read an email's reference codes to determine how to process the email message. Each email reference code typically matches an object stored in the email management database.
- 35      Each object may have a script (i.e., scripting language) that instructs the object how to

process the email message. The scripting language of an object may contain instructions related to the distribution, routing, font styles, access, viewing, purging and message status of an email message as indicated by the email's reference code.

Each email reference code may trigger an icon in the system 140. The icon may alert the user when an email message has been received. All message icons and status features typically are user-definable functions. An email message's font style and color may differ from other email message types. An application the network user is running may blink or flash to alert the user of an incoming email message. For example, a minute message may have a bright blue font, and a distinctive chime may be assigned to the minute message. Another function may include utilizing the clock menu bar, as in Microsoft Windows applications. The clock menu bar may pulse, flash or change color to indicate to the network user a received a minute message. Distinctive chimes or announcement options may be activated to alert the receiver that an email message has arrived. The ring options include ring, ring and vibrate, flash, beep once, silent and vibrate. Various announcement options may be including a male voice, female voice, child's voice or other sounds.

### **Message Viewing**

System 140 may be configured so that a network user may define who can access and view an email message by choosing options from the message viewing field in an email's electronic tag. In such a system, network users may chose an option to block the viewing and access to the text of an email message. Known software with text blocking features includes Page Vault software available from Authentica Security Technologies, Inc. Typically, system 140 is configured so that the text blocked email may be saved, printed, forwarded, copied and/or may be sent as a minute mail, and so that all revisions, copies and purges of an email may be recorded by an email's electronic tag.

Another typical email viewing option may prevent an email from being viewed outside of the organization. The system may use an email reference code that reads the network user's workstation specifications. Prior to sending a new or previously stored email message, the system may read the network user's workstation specifications, including but not limited to network connections, modem utilization, and/or the registry, and compare the specifications to the user's workstation specifications listed in the network user's user profile. If the workstation specifications differ from the workstation

specifications listed in the user's profile, the system typically will not make the email message available for viewing.

### Incoming Mail

5 After the network user has received, opened and read an email message for the first time, the system 140 may assign a temporary electronic tag to the email message. Figures 3-3C are flow diagrams illustrating the system 140 processing an incoming email message. Block 340 represents the system 140 assigning a temporary electronic tag. The network user may choose to file the email with the system 140 or to purge the  
10 email. Regardless of the network user's choice, the system 140 may require all email messages to have an electronic tag. This is to ensure all incoming and outgoing email is recorded, retained and properly stored in the system 140.

The system 140 may be configured to assign a temporary electronic tag to the incoming email and hold it in a temporary file in the central repository database 150.

15 The reference code for the temporary email, e.g., TMP, may be comprised of the text values, and the numeric value assigned may be the recipient's employment identification number. Block 341 represents the system 140 reading the recipient's user profile. For example, a temporary electronic tag may have a reference number of TMP2121, with 2121 representing the employee's identification number.

20 In addition, the system 140 may read the email header information to record the recipient's email address, sender's email address, date, time and subject fields for the electronic tag. Block 342 represents the system 140 reading the email header fields.

The recipient of the email may be reminded that he has an email that is to be filed during system logins. Block 343 represents the system 140 sending an email reminder.

25 Block 344 represents the system 140 asking the network user to determine if he chooses to save the email in the central repository database 150.

If the network user ignores the reminders after a predetermined number of consecutive logins, for example, after three consecutive logins, the system 140 may  
30 send a copy of the email to the system administrator who may file the email or may take an action against the recipient. Block 345 represents the system 140 sending the system administrator a copy of the email.

A network user normally may choose to save the email message or to purge the email message. Figure 6 is a screen display illustrating an email menu screen. The  
35 network user may fill in the fields of the electronic tag and choose to save the email

message. If the user indicates that he wants to save the message, the system 140 may present the user with a central repository database 150 menu. Block 346 represents the system 140 presenting the network user with the central repository database 150 menu. The user may indicate the location and name of the file in which to store the email

5 message. After the user has chosen the location to store the email message in the central repository, the system may prompt the network user to indicate the type of email message he has received. Block 347 represents the system 140 prompting the user to indicate the type of email message he has received.

If the email is a business email, the system 140 may assign a code, e.g., BEM, to

10 the beginning of the email with the master file number to create the reference code for the email. Block 348 represents the system 140 reading the email type. If the email is a personal email, the system 140 may assign a code, e.g., BEM, to the beginning of the email with the master file number to create the reference code for the email. Block 349 represents the system 140 reading the master file location. Block 350 represents the

15 system 140 assigning a reference code. The reference code is recorded in the reference code field of the electronic tag of the email message. Block 351 represents the system 140 recording the reference code field in the electronic tag.

For example, if a user has received a business email message, he may choose to index and store the business email. The user may indicate the file where the email

20 message may be stored. The system 140 may read the master file number from the location where the network user wishes to store the business email message. Next, the network user may determine the type of email message the user has composed. Therefore, if a master file code is 9082, and the network user indicates that the email message is a business email, the electronic tag may be assigned the reference code

25 BEM9082. This reference number may be used by the system to index and track the email in the system 140. In addition, the email management system 140 may use the business email reference code to index, record, search, retrieve and store all business email correspondence with other clients, projects and/or business records and it may determine business email storage and disposal. The reference code is recorded in the

30 reference code field of the electronic tag of the email message. If the network user indicates the email message is a business email (e.g., code BEM) or file, the system 140 may automatically copy the email message into the email records database 180. In addition, the system 140 may read the network user's workstation specifications and the network user's user profile to complete the electronic tag. Block 352 represents the

35 system 140 reading the network user's workstation specifications. Block 353 represents

the system 140 reading the network user's user profile. The electronic tag and the email are saved in the email records database 180. Block 354 represents the system 140 saving the electronic tag and the email.

- If the network user chooses to purge the incoming email message, the system
- 5 140 may prompt the network user to file the email in the central repository 150. If the network user indicates he does not want to file the email message, the system 140 may read the information from the temporary electronic tag and record it as the permanent electronic tag for the email. Block 345A represents the system 140 sorting files to match fields of the email headers. Block 346 represents the system 140 reading the temporary electronic tag. Block 347 represents the system 140 recording temporary electronic tag as a permanent electronic tag.
- 10

The electronic code may be comprised of a text value and the recipient's employee identification number from the network user's user profile. The system may assign a text value, e.g., PUR, to the reference code for the soon-to-be-purged email.

- 15 Block 348 represents the system 140 assigning the PUR code to soon-to-be purged email.

Block 349 represents the system 140 reading the user's profile. The system 140 may begin to purge the email message from the network user's email application, the sender's email application and the email log file.

- 20 The system 140 may read the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag. Block 350 represents the system 140 reading the sender's email address field.

Block 351 represents the system reading the recipient's email address field.

- 25 Block 352 represents the system 140 reading the subject, time and date fields of the email.

Block 353 represents the system 140 reading the copy fields of the email header.

Block 354 represents the system 140 reading the email log file.

- Next, the system 140 may read the email server log file. The system 140 may use a sorting algorithm as is known in the art to search for the email header fields in the log file to match the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag. Block 355 represents the system 140 sorting files to match fields of the email headers.
- 30

Once the exact email entry is found, the system 140 may purge the email message by deleting the entry from the system 140. Block 356 represents the system

140 matching an email header to fields in the electronic tags. Block 357 represents the system 140 purging email.

Next, the system 140 may read any back up tapes, other storage media or any copies of the email that may have been listed in the copy field of the email or forwarded  
5 to other recipients. Block 358 represents the system 140 reading the copy and forward fields of the email header. The system 140 may use a sorting algorithm to search for the email header fields to match the sender's email address field, recipient's email address field, subject field, time and date field, and copy fields of an email's electronic tag. The system may record the purged email by filing the electronic tag in the email  
10 management database 180. Block 359 represents the system 140 recording the email purge. The purging process is also recorded in the email management database 180.

The system may send a final message to the sender and the recipient to indicate the purging process is completed. Block 360 represents the system 140 sending an email purge confirmation notice.

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### Email Contracts

Electronic communications are influencing contract law. The greatest challenge has been to determine exactly when and if a contract is created. In this system 140, an organization must determine their electronic contract policies and procedures. The  
20 email contract policies may determine how electronic contracts are recorded, delivered and accepted.

Figure 7 is a flow diagram illustrating a typical electronic contract process performed by the email management system 140. The network user may indicate that he desires to begin the electronic contract process by choosing an email contract  
25 command in the system 170. Block 700 represents the system 140 receiving a request for an electronic proposal. In response to this request, the system 140 provides the network user with an electronic contract template having an electronic tag. The electronic tag has several fields that the system automatically fills in. The automatic information may be obtained from the network user's user profile and network user's  
30 workstation. The network user has the option of filling in several fields to help him reference and/or identify the email message. The optional fields may include: client name, client number, project name, project number, the purpose of document and a field for notes (text).

Block 701 represents the system 140 presenting a proposal form to the network user. The electronic tag may record and track all activity related to the electronic  
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proposal and contract process. The network user may complete the electronic contract tag to register the name of the individual or organization that will receive a proposal. Next, the network user may be provided with a form of the organization's proposal.

5 The network user may complete the proposal template. Upon completing the template, the network user may be prompted to save the proposal. A copy of the proposal may be saved and registered in the electronic contract database 190.

- Block 702 represents the system 140 registering the proposal. The electronic contract database 190 maintains a record of the organization's electronic proposal and contract documents and their corresponding electronic tags.
- 10 Block 703 represents the system 140 assigning an electronic tag to a proposal. Next, the network user may email the proposal to the prospect. Block 1004 represents the system 140 presenting the email template to the network user.
- Block 705 represents the system 140 receiving a signal from the network user to send an email.
- 15 The system 140 may automatically attach a cover document to the proposal to inform the prospect of the email proposal and the terms of electronic contracting with the offering organization. Figure 15 is a screen display illustrating an email proposal screen. Block 706 represents the system 140 attaching a contract terms document to the email message. A copy of the electronic tag is sent with the electronic proposal. Block 20 707 represents the system 140 recording the time and date the proposal email was sent to the prospect in the proposal's electronic tag. Block 708 represents the system 140 attaching a copy of an electronic tag to the email.
- System 140 may be configured so that, when the prospect opens the email proposal, an email reply with a copy of the electronic tag is sent to the offeror to confirm that the proposal was received and opened by the recipient. Figure 16 is a screen display illustrating an email proposal confirmation screen. Block 709 represents the system 140 receiving the email auto reply. The system 140 records this activity in the electronic tag for the proposal stored in the electronic contract database 190. Block 710 represents the system 140 recording that the email proposal was received. The auto reply may be noted in the first line of the email message attached to the master electronic email proposal.
- If the prospect desires to accept the proposal, the prospect may be instructed to complete the attached proposal acceptance form. The proposal acceptance form has an attached electronic tag which records proposal information. Figure 17, Figure 18,
- 35 Figure 19 and Figure 20 are screen displays illustrating an email proposal screen. The

proposal acceptance form may be emailed back to the offerer. Figure 21 is a screen display illustrating an email proposal signature screen. Block 711 represents the system 140 receiving an accepted email proposal. The system 140 may require that the proposal may only be returned to the offerer and the email address field may not be altered. Block 712 represents the system 140 activating the proposal email message status. The proposal message status informs the offeror that an email proposal has been received. The network user typically may define how he wants to be notified by setting choosing from several message notification options from the message notify menu. For example, the network user may choose notification options that include notifying the offeror via an icon flashing on the screen, an icon flashing with a sound, or via an automated email message, or a pager number may be dialed by the system and a email contract waiting message tone or text message may appear on the offerer's pager. The electronic tag records the time and date the proposal entered the email system. Figure 22 is a screen display illustrating the email contract electronic tag screen. When the offeror opens the accepted proposal, the system typically automatically sends an email message to the prospect (i.e., client) to confirm that the proposal acceptance email message was received. Block 713 represents the system 140 recording the proposal acceptance. Block 714 represents the system 140 sending an email to prospect to confirm email proposal acceptance. Block 715 represents the system recording that the confirmation email was sent to the prospect. The proposal acceptance information may be recorded by the electronic tag. As soon as the electronic proposal is received by the offerer's email system, the system 140 typically alerts the offerer and sends an email reply to the prospect to confirm that the proposal was received. The electronic proposal email may be implemented to alert the network user that a proposal has been received such as, for example, by flashing a proposal icon on the network user's workstation. Block 716 represents the system 140 storing the accepted proposal. The system 140 may store the accepted proposal in the electronic contracts database 190.

In addition to the proposal tracking process, all contract and client-related correspondence may be tracked via email and/or documents stored in the central repository database 150.

#### Watermark

System 140 may be configured so that a watermark is used to authenticate an email message. In one embodiment of the system 140, a watermark may be a user-definable print feature which may be comprised of an image which is unique to an

organization, business unit, department, branch or other segment of an organization's business. The watermark may also contain information that links the email to information contained in its electronic tag, which may include its reference code, the date the document was printed, the workstation the email form was sent from, who sent

5 the email, and other user-definable fields to record system or user information.

Figure 4 is a flow diagram illustrating the process used by the system to print a document containing a watermark. The network user may choose to print a document containing a watermark. After the system 140 receives the print request, the system 140 may retrieve the email from the email records management database 190. Block 401 represents the system 140 receiving the print request. Block 402 represents the system retrieving the email from the email records management database 190. The system 140 may retrieve the watermark image from a watermark database 200. Block 403 represents the system 140 retrieving a watermark image.

Next, the system 140 may begin assembling a watermark. The system may read several fields from the email's electronic tag. Block 404 represents the system 140 reading fields from the electronic tag. The minimal fields read may include its reference code, the date the document was printed, the workstation the email form was sent from, and who sent the email form. Additional user-definable fields may be read by the system 140. The system 140 may insert the reference code from the reference code field of the electronic tag into the image. Block 405 represents the system 140 inserting the reference code into the image. Next, the image may be placed in the email document. Block 406 represents the system 140 placing the image in the email document. Next, the email file with the watermark is sent to the printer to be printed. Block 407 represents the system 140 sending the email to printer. The information embedded in the watermark allows an end user the opportunity to track the printed document to the email's electronic tag stored in the central repository database 150.

### Email File Attachments

The system may be configured so that files attached to email messages are also retained in the email records management database 180. It typically is important to store the file attachment with the email message in order to ensure proper record management. Each file attachment may be converted to an HTTP format. This will allow the system 140 to maintain a picture of the file. The system may also utilize file compression software, e.g., PKUNZIP, to compress the files to increase file storage space.

## Email Records Management Database 180

The email records database 180 provides a method to index, record, and store business email messages sent from an organization and may act as method to authenticate email messages. As a policy all business email messages sent outside of an organization may be required to have a method to retain a copy of each message and a way to prove the message's authenticity.

After an email message has been assigned a reference code and is sent, the system 140 typically begins the process of recording the message in the email records management database 180. The business email's reference code, e.g., BEM, instructs the system 140 to automatically convert the text file format of the email message into a read-only format for storage in the central repository database 150. Next, the system 140 records a copy of the email message into the records management database 180 and copies the email message into the central repository database 150. This process allows an organization to retain a copy of all business email messages for their records. Email authentication is insured since the business email message was copied immediately after the network user stored or sent the email message.

The email records database 180 utilizes the reference code from the email's electronic tag to index, store and record the email message in the database 180. The reference code assists the system in indexing the email into the correct master file. For example, the master file number may be 9082. The business email reference code may be BEM9082. The reference number tells the system to file the business email in the file with the master number 9082.

The system 140 is typically configured so that most network users may not have access to the email records database 180 due to the fact that the purpose of the database 180 is to provide authentic records of the business email messages sent and received by the organization. A high level official within the organization may use an encryption key to access the email records within the system 140.

## Email Record Retrieval

All business email may be indexed, stored and retrieved by its electronic tags and stored in the email records management database 180. The electronic tag, with its information fields, allows search engines to quickly retrieve messages from the central repository database 150. Figure 23 is a screen display illustrating an electronic tag screen. The network user searches the central repository database 150, such as with a web browser or other search tool. Electronic tags allow the system 140 to maintain a

- historical record of an email message. An email's historical record begins when the email is first assigned an electronic tag and is registered in the document management system 135. An email's historical record is collected by the information recorded in an email's electronic tag. The electronic tag information is stored in the central repository.
- 5 An email's electronic tag is typically not deleted from system 140 until the email is formally disposed of according to an organization's records management policy.
- System 140 may be configured so that a document management Intranet web site may be used to access a related document's electronic tag information and document history. The network user typically has the option of filling in several fields
- 10 to request information about a particular document. The screen user interface may be similar to a World Wide Web search engine interface. Figure 24 is a screen display illustrating a screen to request an email record. The user may have the option of completing as many or as few fields as he or she desires. An example of an existing search engine is Lycos on the World Wide Web.
- 15 During a typical search, the system 140 searches the electronic tags in the central repository to obtain document information and returns the results to the network user. Figure 25 is a screen display illustrating a search engine interface. Figure 26 is a screen display illustrating a search engine interface. Once the email is retrieved, an email's electronic tag may appear on the screen. Figure 27 is a screen display illustrating an email report. A search for an electronic tag may produce several records including the document's access history including records of who last viewed the document and for how long, who extracted a copy of the document, who checked out the document, who returned the document, who removed the document, and any changes in electronic tags; information on all versions of a particular document; and any copying or migration
- 20 processes leading to the current version, including the software used during the copying and migration process; the type of platform(s) and/or software used to reformat or convert the document as part of that migration; and the type of software package(s) used to alter or copy the document's content and machine-generated evidence, indicating any changes which were made to the document's content; the recovery
- 25 process, including the date and time a backup copy was made, and the date and time of the recovery. This permits identification of any 'window' in which an updated version of the document, now lost, could have been used. All documents with electronic tags may be stored on optical media, in a stand-alone system or a network environment, and can be dynamically accessed by the document title, information fields in the document's
- 30 electronic tag or the electronic reference number through search engines. An example
- 35

of an existing search engine is the Yahoo® system available from on the World Wide Web. Such search engines may be used to review all of the information in the central repository to match a document query. For example, a search can be made across multiple document types (series), limited to a particular document type or a group of

- 5 document types and can use several search methods to focus on a particular value, field, date, text string or range of values, can combine several search methods, such as Boolean logic. Search strategies can be saved for future reference.

Policy makers, legal counsel and high level management of an organization typically are the only individuals who may have access to the email records  
10 management database 180. Pretty Good Privacy is an encryption key that is currently on the market and that is designed to insure the integrity and authenticity of the business email messages stored in the email records management database 180.

#### **Automated Email Record Storage, Disposal and Purging**

- 15 The email records database 180 typically calculates the life cycle stage of all records, including email, and prints a record of all semi-active and final stage records so that they may be removed from active storage and placed on appropriate storage media such as secondary optional media or in a box for transfer off-site. Known products that manage records include Records Management Software available from QRMS. The  
20 process may be recorded in the policy effectiveness module 140 and stored in the email records management database 180. The system 140 may prompt the system administrator via email and may identify the documents that are to be eliminated, purged and/or are no longer needed for any legal, operational, or other purpose.

#### **25 Print, Access and Viewing Options**

- The system 140 may be configured to provide for various email print options including Electronic Tag Only, Email Only, and Email with Tag, No Print, No Access, Limited Access, No Viewing, Email with file attachment and typically are detailed in the print option section of the document management system 135. This process is  
30 similar to printing documents in a word processing system such as the Microsoft Word word processing system available from Microsoft Corporation.

When printing from the email records management database 180, network users may be required to have an encryption key, such as the Pretty Good Privacy system mentioned earlier.

## Email Records Retention

Typical email systems enable users to delete messages from the “in-box”, but the email messages are likely stored on one or more file servers and backup tapes. Records retention software such as RetentionManager available from Skupsky provides for the tracking and automating records retention by the system administrator. The email compliance system 140 may be configured to automatically reminds the system administrator to execute records retention procedures in the email records retention module. The email records retention module typically provides system administrators with a checklist of procedures to execute as part of managing the system 140. Figure 28 is a screen display illustrating an email records retention notice. The system administrator usually may not bypass the tasks within the system 140 such as purge the messaging system, properly dispose of internal messaging records and media, backup/archive (time field can be chosen) email server messages to tape/media, label and date email tape/media, register new email tape/media in the system’s tape archive database, indicate the storage and location of newly archives email tape/media, and the proper dispose procedures of archived email tape/media. If the system administrator continues to ignore reminders related to such tasks, the email management system 140 preferably requires the system administrator to execute the tasks in order to proceed with the use of the system.

After the system administrator has followed the instructions, the system administrator is prompted to log into email compliance system 140 and complete the record retention report form to confirm each step has been completed. Figure 29 is a screen display illustrating a records retention confirmation report. The email compliance system 140 may send email messages to the LAN Administrator and a policy officer if the system administrator fails to execute retention procedures and/or complete retention reports. The email compliance system 140 has several technical support options to access in-house tech support via telephony, email message, fax, or telephone.

The foregoing description of the embodiments of the present system have been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to any particular form disclosed. Many modifications and variations are possible. It is intended that the scope of the invention be limited only by the following claims.